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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,205	03/17/2004	Michael Leu	4999-0030	3767
35301 7590 04/23/2008 MCCORMICK, PAULDING & HUBER LLP CITY PLACE II 185 ASYLUM STREET HARTFORD, CT 06103				
EXAMINER				
ABOAGYE, MICHAEL				
ART UNIT		PAPER NUMBER		
1793				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/802,205

Applicant(s)

LEU ET AL.

Examiner

MICHAEL ABOAGYE

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki (US Patent No. 5,463,197) in view of Nakamura (US Patent No. 6,566,770).

Miyazaki discloses a wire bonder comprising: a power module supplying electrical power to drive the bondhead (see block diagram figures 1 and 2; and column 4, lines 27-33), a power switch for controlling the supply of electrical power, a timer control circuit with a counter "8" (see block diagram in figures 1 and 2, column 5, lines 29-49), a control program (figures 1 and 2; column 5, lines 50-67) and an emergency switch which upon activation shuts off power supply to the bondhead (column 8, lines 39-51). Note, the examiner considers the light curtain to be a basic feature required in any work area to enable operator's visual access and also to operate any of the equipment therein.

Miyazaki does not expressly teach expressly teach an emergency switch when activated capable of causing a control program to complete a current bond cycle and then suspend the further wiring.

However, Nakamura teaches a semiconductor manufacturing apparatus, comprising, a power source unit "11" (figure 2, column 4, lines 25-67), a power control unit "5" (figure 2, column 4, lines 25-67), an emergency-off switch "1" (figure 2, column 4, lines 25-67), a reset switch "7" (figure 2 and 3A, column 4, lines 25-67) for resetting the system from the emergency state to normalcy (note this switch is associated with a timer); wherein the control unit associated with emergency switch is operable to cause a delay in the action of the emergency switch until an operation or a process in progress runs to completion (column 3, lines 41-54).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to modify the wire bond apparatus of Miyazaki to include the emergency switch and the controller configuration of Nakamura in order to delay the process termination action on activation of the emergency switch until a process in progress runs to completion (Nakamura, column 3, lines 41-54).

3. Claims 1-3 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki (US Patent No. 5,463,197) in view of Schmidt et al. (WO 03/015974 , see US equivalent US Patent No. 6,566,770).

Miyazaki discloses a wire bonder comprising: a power module supplying electrical power to drive the bondhead (see block diagram figures 1 and 2; and column 4, lines 27-33), a power switch for controlling the supply of electrical power, a timer control circuit with a counter "8" (see block diagram in figures 1 and 2, column 5, lines 29-49), a control program (figures 1 and 2; column 5, lines 50-67) and an emergency

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switch which upon activation shuts off power supply to the bondhead (column 8, lines 39-51). Note, the examiner considers the light curtain to be a basic feature required in any work area to enable operator's visual access and also to operate any of the equipment therein.

Miyazaki does not expressly teach expressly teach an emergency switch when activated capable of causing a control program to complete a current bond cycle and then suspend the further wiring.

However, Schmidt teaches a welding system with a power source, a control circuit for controlling the safety of the welding process; a timer; at least an emergency switch associated with the safety control unit; wherein upon activation of the emergency switch does not lead to a complete shown down of the power source, but the power is shut down in a delay manner to allow an ensuing operation to run to completion or an operator safety command is issued. The system also provides for an after emergency restart controller (Schmidt et al. (US), abstract, figures 1-3, column 7, lines 53-57 and column 8, lines 1-45).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to modify the wire bond apparatus of Miyazaki to include the emergency switch and controller configuration of Schmidt et al. in order to delay the process termination action of the emergency switch until said process in progress runs to completion to ensure the operators safety (Schmidt et al. (US), column 8, lines 21-45).

4. Claims 4-6 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki (US Patent No. 5,463,197) in view of Nakamura (US Patent No. 6,566,770) as applied to claim 1 above and further in view of Sugimoto et al. (US Patent No. 4,485,957).

Miyazaki and Nakamura do not expressly teach a pressure sensor. However, Sugimoto et al. teaches a wire bonder with alt least a pressure sensor ("23 and 24", figure 8b) attached to the clamber which is operable in sending electrical signal to adjust and control the gap between the clamping arm (Sugimoto et al., abstract, column 7, lines 11-47 and column 10, lines 18-25).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to modify the combined invention of Miyazaki to include a pressure sensor as taught by Sugimoto et al. to control the clamping force exerted on the wire by the clamping arms (Sugimoto et al. column 7, lines 25-47)

5. Claims 4-6 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki (US Patent No. 5,463,197) in view of Schmidt et al. (WO 03/015974, see US equivalent US Patent No. 6,566,770) as applied to claim 1 above and further in view of Sugimoto et al. (US Patent No. 4,485,957).

Miyazaki and Schmidt et al. do not expressly teach a pressure sensor. However, Sugimoto et al. teaches a wire bonder with alt least a pressure sensor ("23 and 24", figure 8b) attached to the clamber which is operable in sending electrical signal

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to adjust and control the gap between the clamping arm (Sugimoto et al., abstract, column 7, lines 11-47 and column 10, lines 18-25).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to modify the combined invention of Miyazaki and Schmidt et al. to include a pressure sensor as taught by Sugimoto et al. to control the clamping force exerted on the wire by the clamping arms (Sugimoto et al. column 7, lines 25-47).

6. Claims 7-12 and 19-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki (US Patent No. 5,463,197) in view of Nakamura (US Patent No. 6,566,770) as applied to claim 1 above and further in view of Behler et al. (US Pub. No. 2002/0093130).

Miyazaki and Nakamura do not expressly teach a vacuum sensor.

Behler et al. teaches a wire bonder comprising a vacuum suction device, for holding the substrate; wherein the vacuum device is associated with a sensor for control the vacuum strength at a desired level (abstract, paragraphs, [0005], [0010],[0012], [0013]-[0014]).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to modify the combined invention of Miyazaki and Nakamura to use a vacuum suction device with a sensor as taught by Behler et al. to control the vacuum strength at a desired level and to hold the substrate flat during the mounting process (Behler et al., paragraphs, [0001] and [0015]).

7. Claims 7-12 and 19-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki (US Patent No. 5,463,197) in view of Schmidt et al. (WO 03/015974, see US equivalent US Patent No. 6,566,770) as applied to claim 1 above and further in view of Behler et al. (US Pub. No. 2002/0093130).

Miyazaki and Schmidt et al. do not expressly teach a vacuum sensor.

Behler et al. teaches a wire bonder comprising a vacuum suction device, for holding the substrate; wherein the vacuum device is associated with a sensor for control the vacuum strength at a desired level (abstract, paragraphs, [0005], [0010],[0012], [0013]-[0014]).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to modify the combined invention of Miyazaki and Schmidt et al. to use a vacuum suction device with a sensor as taught by Behler et al. to control the vacuum strength at a desired level to hold the substrate flat during the mounting process (Behler et al., paragraphs, [0001] and [0015]).

Response to Arguments

8. Applicant's arguments filed February 27, 2008 have been fully considered but they are not persuasive. Applicants assert that Miyazaki does not mention the term "bondhead", and that Miyazaki's disclosure is directed to a ball forming apparatus which is only a small part of a wire bonder, however contrary to this assertion the Applicant further in his argument stated that **"although the wire bonder of Miyazaki has a**

bondhead, Miyazaki is silent as to the nature and operation of the bondhead". It is believed that said applicant's statement affirms the inherency position taken by the examiner. Applicant also argues that Figures 6 and 7 of Miyazaki do not disclose the electrical circuitry for controlling the motion of the bondhead. These figures show electrical circuitry which is needed for melting the wire protruding out of the capillary into a ball. Applicants therefore maintain that Miyazaki does not disclose and describe a power module for the operation of the bondhead. The examiner disagrees. The examiner's position is that the bondhead of Miyazaki's would necessarily describe some form of movement during the bonding process and that said movement or motion would also be necessarily be controlled by the electrical circuitry like the other devices in the apparatus assembly.

Regarding claim 1, the applicant argues that There is no prior art that discloses the feature that the at least one emergency switch be configured for producing upon activation a signal for causing the control program to complete the current bond cycle and then suspend the further wiring. The examiner's position is maintained, that though Schmidt et al. does not teach wire bonding. Schmidt teaches a welding system with a power source, a control circuit for controlling the safety of the welding process; a timer; at least an emergency switch associated with the safety control unit; wherein upon activation of the emergency switch does not lead to a complete shown down of the power source, but the power is shut down in a delay manner to allow an ensuing operation to be come to completion or an operator safety command is issued. Nakamura also employs a similar emergency switch for controlling and improving a

semiconductor device manufacturing process. That applying a known technique to improve similar devices in the same way would be obvious to one of ordinary skill in the art. In this instant cases applying the emergency switches of either Schmidt or Nakamura to improve and/or control the operation of Miyazaki apparatus.

The applicant also maintains that completing the current bond cycle means that the bondhead may be accelerated and decelerated one or more times before its motion is finished. The examiner's position is maintained that said limitations are not recited in the claims. During patent examination, the pending claims must be "given the broadest reasonable interpretation." Applicant always has the opportunity to amend the claims during prosecution, and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969).

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL ABOAGYE whose telephone number is (571)272-8165. The examiner can normally be reached on Mon - Fri 8:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael Aboagye/
Assistant Examiner,
Art Unit 1793

/Kevin P. Kerns/
Primary Examiner, Art Unit 1793